

HISTORICAL - HOBBY BOILERS

PURPOSE:

The intent of this brochure is to educate and provide direction to owners and operators of historical - hobby boilers. The recommendations in this brochure may be applied to all historical boilers in operation for demonstration purposes at fairs, museums, steam shows, historical attractions or any other locations frequented by the public.

Inspection requirements can be found within the Wisconsin Administrative code Chapter Comm 41, Boilers and Pressure Vessels.

DEFINITIONS:

HISTORICAL - HOBBY BOILERS – a steam boiler of riveted construction, preserved, restored or maintained for hobby or demonstration use. Steam locomotives, traction engines, hobby boilers and steam cars may be considered historical boilers.
CERTIFIED INSPECTOR – person who holds a valid credential issued by the department under Chapter Comm 5 as a certified boiler-pressure vessel inspector.
HYDROSTATIC TEST – boiler or vessel completely filled with ambient (60-120 degrees F) temperature water and pressurized to 1 ¼ times the MAWP or at least the set pressure of the safety valve.
INTERNAL INSPECTION – an inspection made when the boiler or pressure vessel is shut down and handholes and manholes or other openings are opened or removed for inspection of the interior. This includes a thorough cleaning of both firesides and watersides of the boiler prior to inspection.

GENERAL REQUIREMENTS

1. Historical Boilers shall be inspected per Chapter Comm 41 and in accordance with the guidelines set forth in the National Board Inspection Code (NBIC), Appendix C. Code details Comm 41, Subchapter IX.
2. Annual internal inspections may alternate every other year with either an in-service inspection or a hydrostatic pressure test per NBIC, C-2020 c.
3. Ultrasonic tests (UT) and pressure calculations shall be completed every five years by the owner/user or a qualified and responsible organization as designated by the owner.
4. Owner/users shall obtain and maintain a current permit to operate (PTO) per Comm 41.24(1)(a).
5. The current PTO shall be displayed for public view near controls on the engine/equipment during operation at any public location.

INSPECTION AND TESTS

INTERNAL INSPECTION

The owner/user shall prepare the boiler for internal inspection.

1. Firesides shall be opened and grates removed. The fireside furnace, flues and tubesheets shall be wire brushed, scraped and thoroughly cleaned of soot and ash.
2. Watersides shall be drained and handholes, plugs and inspection openings removed. Sediment, scale and mud shall be flushed clean from the boiler.
3. Fusible plugs shall be inspected and removed to determine thread conditions in crown sheet, and confirmed as an ASME Standard plug.

4. The condition of boiler furnace, shell, tubesheet, fittings, staybolts and other materials shall be visually inspected for thinning, pitting, cracks or corrosion.

HYDROSTATIC PRESSURE TEST

The owner/user shall prepare the boiler for hydrostatic test.

1. Boiler firesides and watersides shall be opened and properly cleaned prior to filling completely with water at ambient temperature.
2. Pressure gages shall be calibrated prior to the test or documentation shall be provided at the time of a test for an inspector to verify that pressure gage calibration was completed.
3. Safety valve(s) shall be removed and openings(s) plugged prior to applying pressure.
4. The hydrostatic pressure shall be slowly raised to test pressure acceptable to the inspector and pressurized to 1 ¼ times the MAWP or at least the set pressure of the safety valve.
5. The boiler shall be inspected for leakage at firesides, watersides and appurtenance connections.

ULTRASONIC TESTS AND PRESSURE CALCULATIONS

1. Ultrasonic tests shall be completed every five years per NBIC, C-2020 d on a mapped grid system. To obtain meaningful UT test results, the recommendation is that owners utilize at least a 16" grid on full size boilers, 8" grid on ½ scale boilers and a 4" grid on ¼ scale boilers to document material thickness.

2. Pressure calculations shall be completed based on the minimum UT thickness data gathered and documentation shall be made available to the inspector for review and acceptance. The owner/user may use the Hobby Boiler Inspection Checklist form SBD-10759 which includes equation, formula and nomenclature for calculations.
3. Owners shall maintain initial and subsequent grid mapped UT readings with pressure calculations in permanent boiler records to verify fitness for service and utilize as a reference for future repair analysis.
4. Exemptions: Historical boilers bearing an ASME "S" stamp; locomotives that receive regular inspections by the US Government complying with 49 CFR 230 and WI Specials where the owner can provide documentation of the conditional approval are exempted from the above UT examination and calculation requirements. Note: An Inspector may require UT tests and calculations for any historical boiler based on conditions observed during visual and/or hydrostatic tests.

RECIPROCITY WITH JURISDICTIONS

1. Out-of-state historical - hobby boilers owner/user shall provide UT tests and pressure calculation documentation in accordance with the NBIC, Appendix C, Section C-4000.
2. The owner shall provide copies of welded repair or alteration documentation as required in Comm 41.38(2). The owner/user shall provide a copy of the valid jurisdictional certificate of operation or PTO.
3. The boiler owner/user shall arrange for an inspection after the certified inspector receives, reviews and accepts the documentation as required in sections 1, 2

and 3 above. Inspectors shall be given at least 5 business days advance notice to arrange for the inspection.

4. Upon satisfactory inspection, the owner/user shall obtain a valid PTO and shall post it near controls on equipment during operation at any public location.

WELD REPAIRS AND ALTERATIONS

Welded repairs and alterations to boilers and pressure vessels must be completed in accordance with Comm 41, Subchapter VI (Comm 41.60 – 41.64) and the National Board Inspection Code (NBIC). All repairs and alterations including "routine repairs" shall be registered on the appropriate form with the National Board per Comm 41.62.

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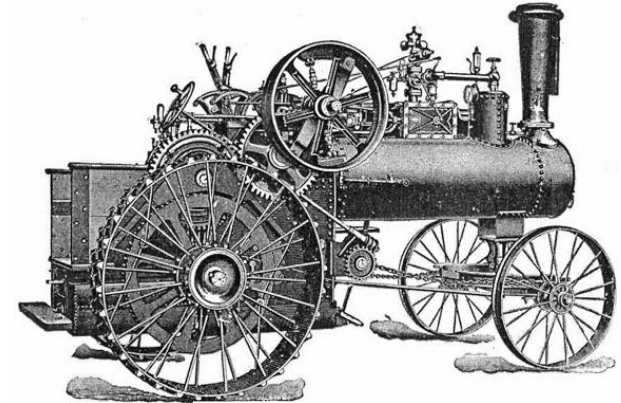
- Staff Contact Information
- Specific Programs, "Boilers"
- Code Copies, "Chapter Comm 41"
- Inspector District Maps
- Division Forms, "SBD-6314 or SBD-5204"
- Hobby Boiler Inspection Checklist, "SBD-10759"
- Individual Credential Status
- Search Regulated Object data for B registration #

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